CDM

White River TMDL

Technical Memorandum No. 1B

To: *Staci Goodwin, Jennifer Hutchison/IDEM*

From: *Gary Mercer, Heather Cheslek/CDM*

Date: *January 15, 2003*

Subject: *White River TMDL*

Summary of Instream Data for Cyanide, Ammonia, E. coli Bacteria and Dissolved Oxygen

CDM has reviewed the available data from the City of Indianapolis Office of Environmental Services (OES), the Marion County Health Department (MCHD), and the Indiana Department of Environmental Management (IDEM) pertaining to the White River from the upstream boundary of Marion County downstream to Waverly for use in performing a Total Maximum Daily Load (TMDL) for cyanide, ammonia, *E. coli* bacteria, and dissolved oxygen.

For this data review and assessment for compliance with water quality standards, all data collected by OES, MCHD, and IDEM is considered to have received quality assurance checks by the respective collecting entity (OES, MCHD, or IDEM). Therefore, data checking was not performed by CDM for this analysis. Data flagged by the collecting entity as questionable is presented in the attached graphs and noted as being questionable, but not used for determination of compliance. Additionally, all data is considered comparable and is combined for assessment of compliance. That is, where data is collected by more than one entity at a particular monitoring locations, the data sets are combined for the assessment. IDEM has approved OES and MCHD data.

The following paragraphs summarize the findings from each source and the overall percent compliance with Indiana surface water quality standards set in the Indiana Administrative Code (327 IAC 2-1-6) for each parameter.

Cyanide

The City of Indianapolis OES and IDEM have quarterly cyanide data for the period of March 2000 to November 2001. The current Indiana surface water quality standard for total cyanide for the chronic aquatic criterion (CAC) is 5.2 ug/L (327 IAC 2-1-6 Table 1). Cyanide

exceedences in the White River appear to be stemmed from discharges from the Belmont and Southport Advanced Wastewater Treatment (AWT) plants. This initial assumption is supported by the data for the Tibbs/Banta, Southwestway Park, and Waverly (SR 144) sampling stations. The data at the previously mentioned stations show a number of exceedences while data upstream of these stations and both AWT plants shows only one cyanide exceedence. Also, for the last three sampling rounds in 2001 the sampling data from all stations are below the total cyanide standard of 5.2 ug/l.

Ammonia

The City of Indianapolis OES has available ammonia data for January 2000 to December 2001. Currently, the state of Indiana uses water quality standards developed for ammonia by EPA in 1998. The data indicates that for the past two years (2000 and 2001) the stream consistently met the Indiana standard (1999 EPA Standard) for ammonia. Since this section of the White River is meeting the ammonia criteria, ammonia is proposed to be delisted in the draft 2002 303(d) listing for this reach of the river.

E. coli Bacteria

Monthly *E. coli* bacteria sampling data for January 2000 to December 2001 was analyzed from OES, MCHD, and IDEM. Indiana Administrative Code (327 IAC 2-1-6) states the following for *E. coli* bacteria water quality standards:

> *E. coli* bacteria, using membrane filter (MF) count, shall not exceed one hundred twenty-five (125) per one hundred (100) milliliters as a geometric mean based on not less than five (5) samples equally spaced over a thirty (30) day period nor exceed two hundred thirty-five (235) per one hundred (100) milliliters in any one (1) sample in a thirty (30) day period.

The percent compliance of *E. coli* during the recreational season (April through October) generally decreases when moving from the upstream boundary at 96th Street (64%) to the downstream boundary at Waverly (21%) for the maximum monthly value of 235 standard. Only the New York Street sampling location has sufficient sampling frequency (5 samples in 30 days) for a geometric mean comparison. That station never achieved compliance with the geometric mean monthly standard of 125 during 2001.

Dissolved Oxygen

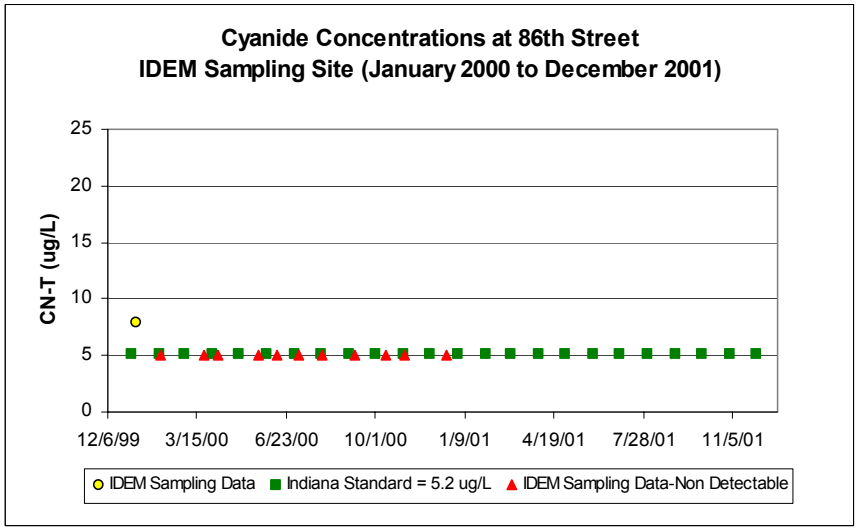
Dissolved oxygen (DO) data has been collected at 15 locations on the White River at varying intervals ranging from monthly to weekly from January 2000 to December 2001. The data for 14 stations out of 15 showed one hundred percent compliance with the Indiana DO standard of 4 mg/L minimum and 5 mg/L average per day. The one exception was at the New York Street station, where there was one occurrence of being below the standard of 4 mg/l.

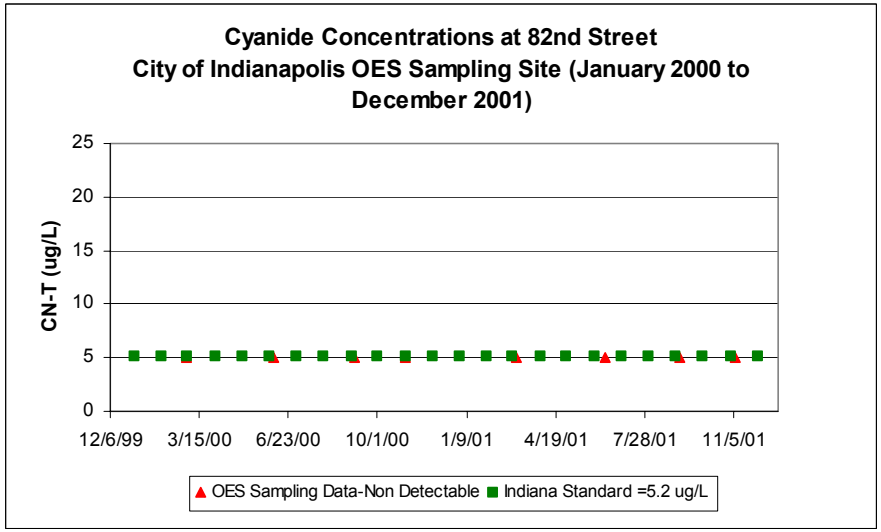
In addition to the grab samples, OES also deployed continuous dissolved oxygen and temperature probes for three locations, 16th Street, IPL, and Waverly (Rt 144) for July through November in 2001. Compliance with the minimum value of 4 mg/l for DO was 100% at the 16th Street and IPL monitoring stations, where it was only 96% of the time for the Waverly (Rt. 144) station. Compliance with the daily average of 5 mg/l was 100% at 16th Street and 99.3% at IPL and 98.7% at Waverly (Rt 144).

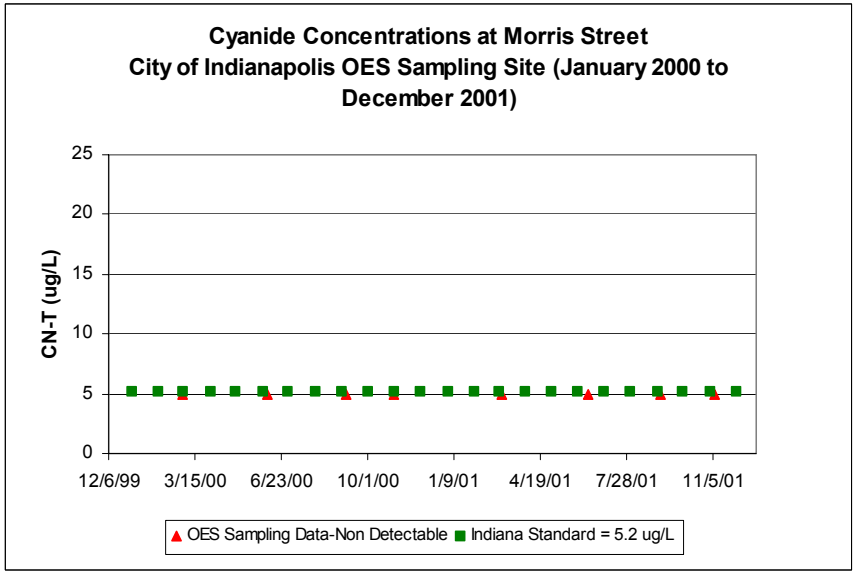
Since there are few dissolved oxygen violations a technical memorandum will be written to IDEM to recommend delisting this portion of the White River from Indiana's 303(d) List of Impaired water bodies for dissolved oxygen impairment.

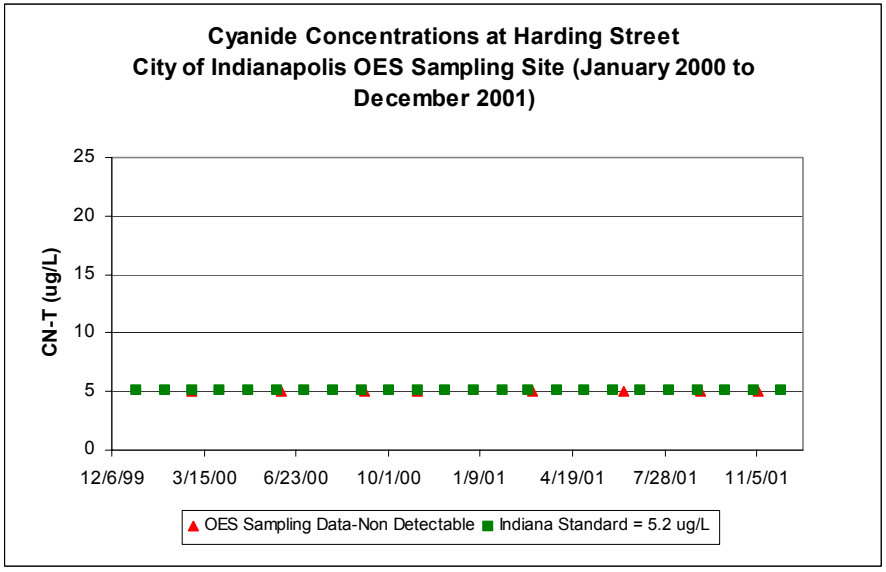
cc: Lara Daly – City
John Chavez - City
Robin Garibay, Advent Group
Mark Burgess, CDM
Srini Vallabhaneni, CDM

White River Cyanide Data









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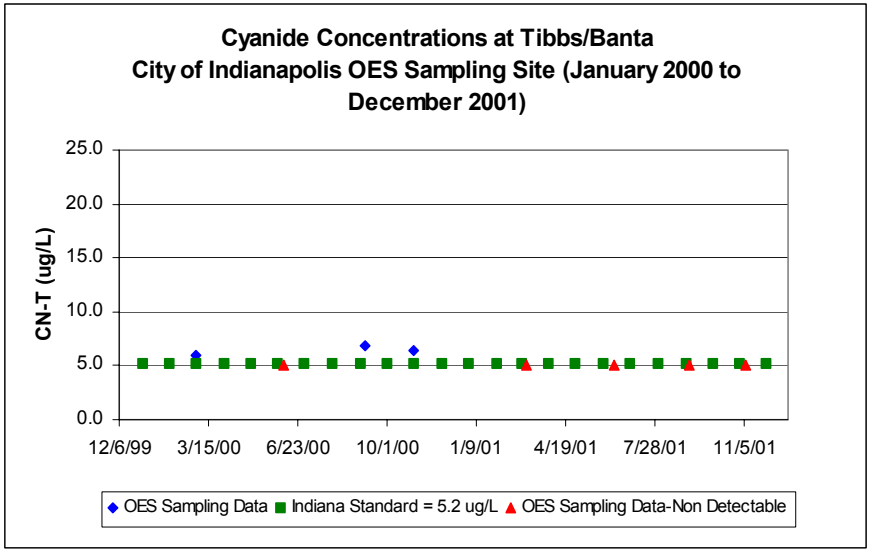
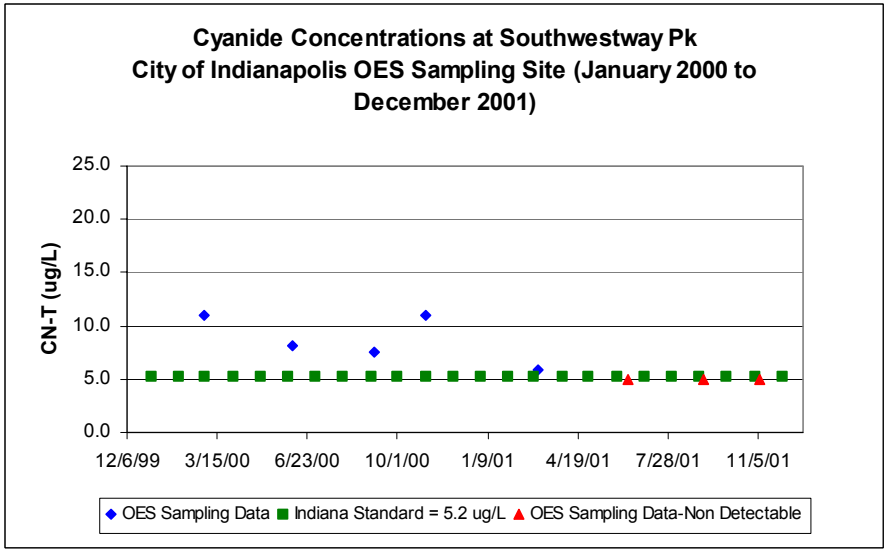
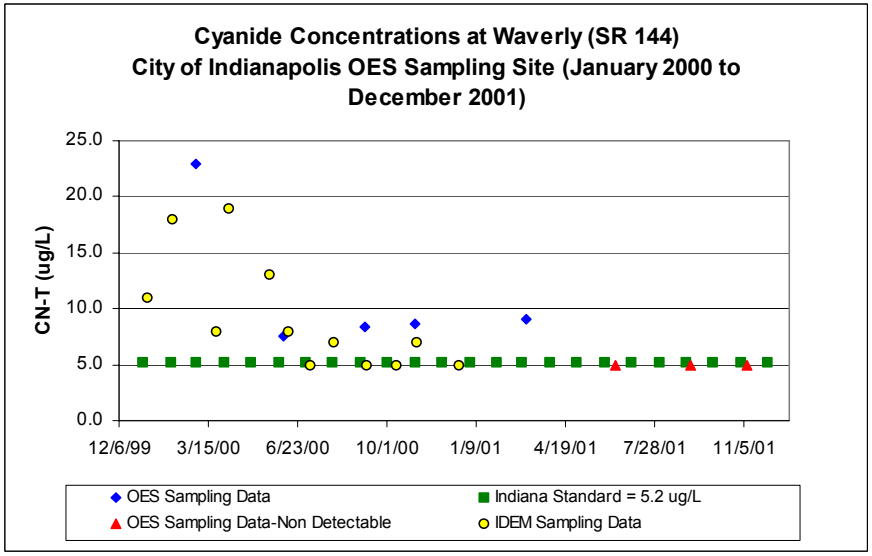
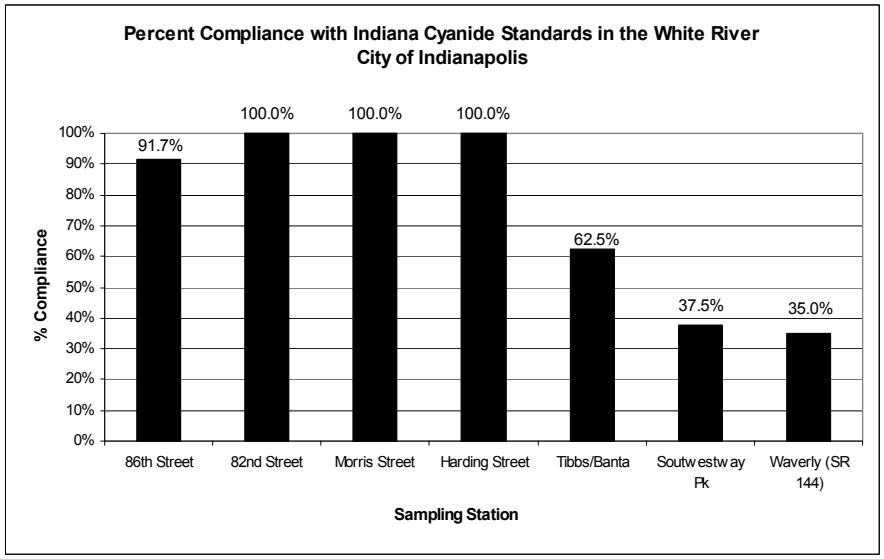
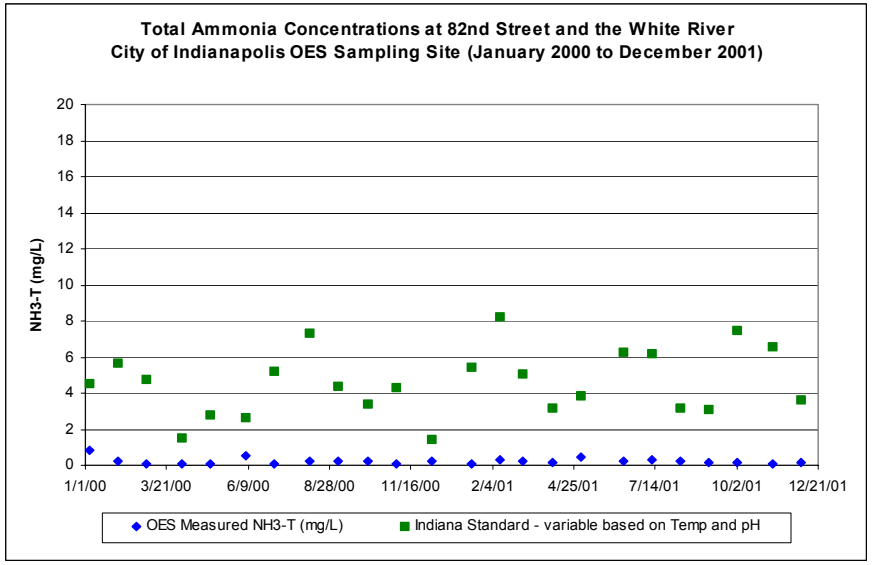


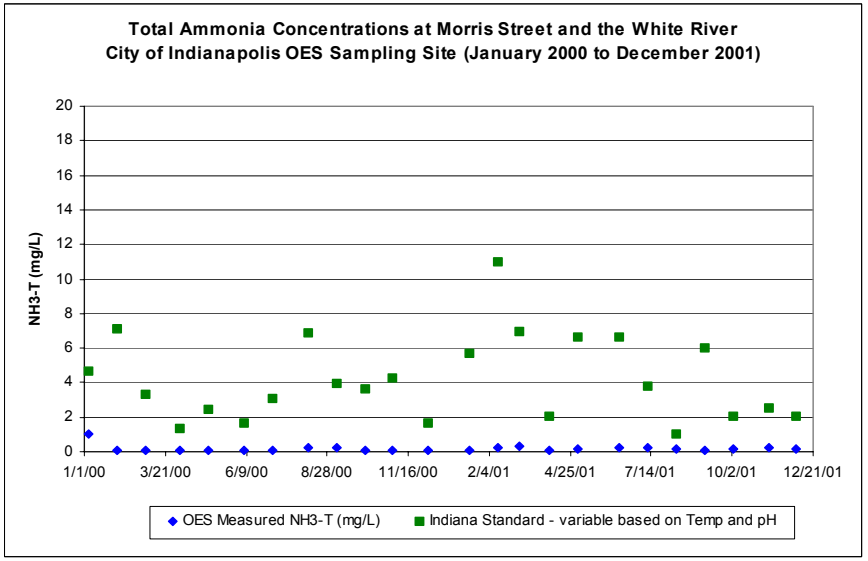


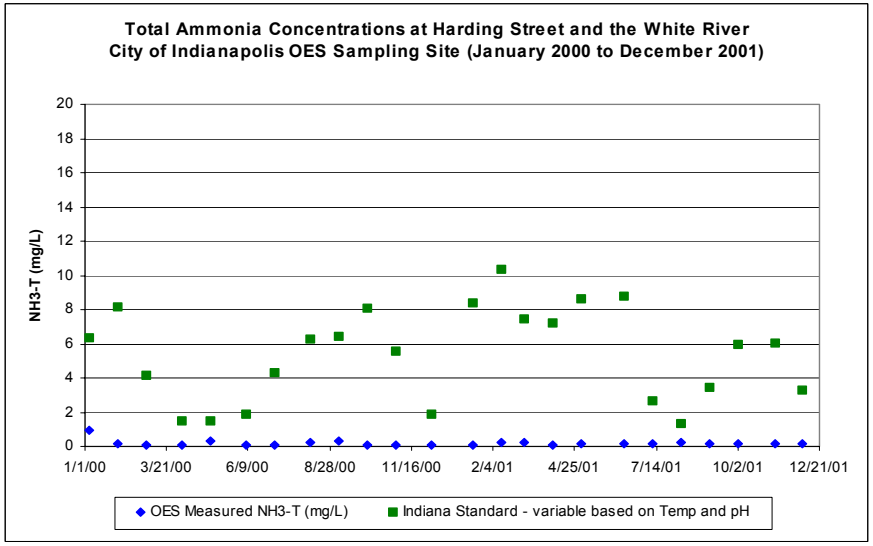


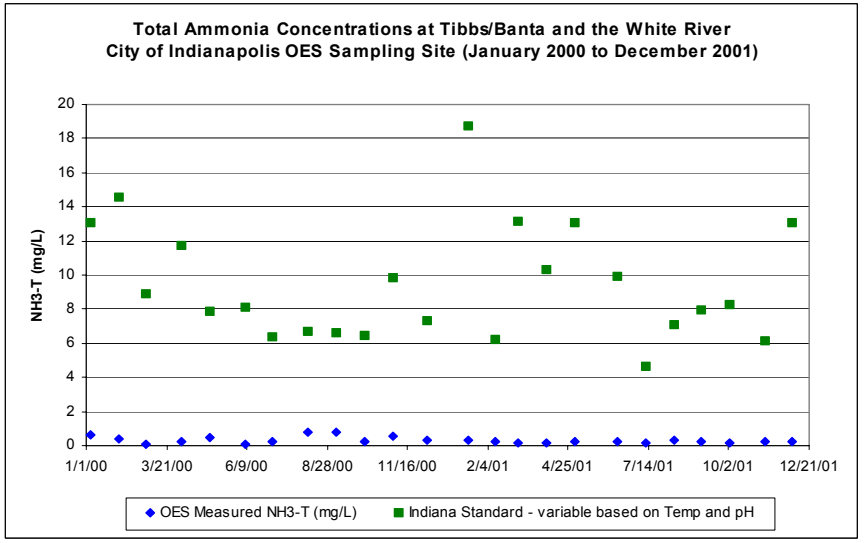


White River Ammonia Data









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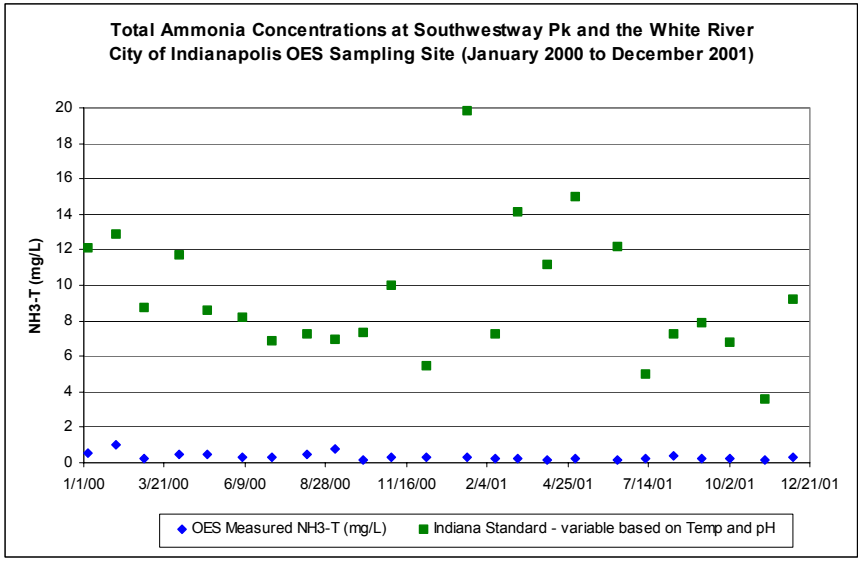
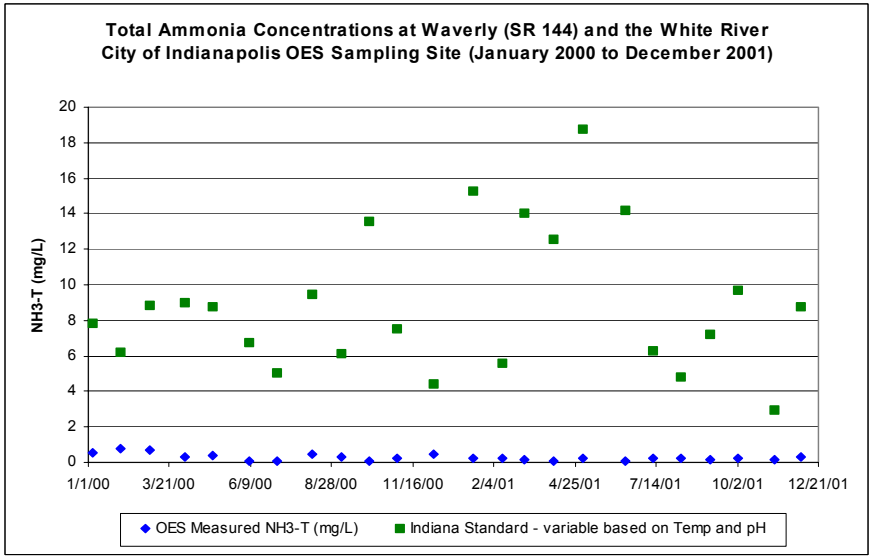
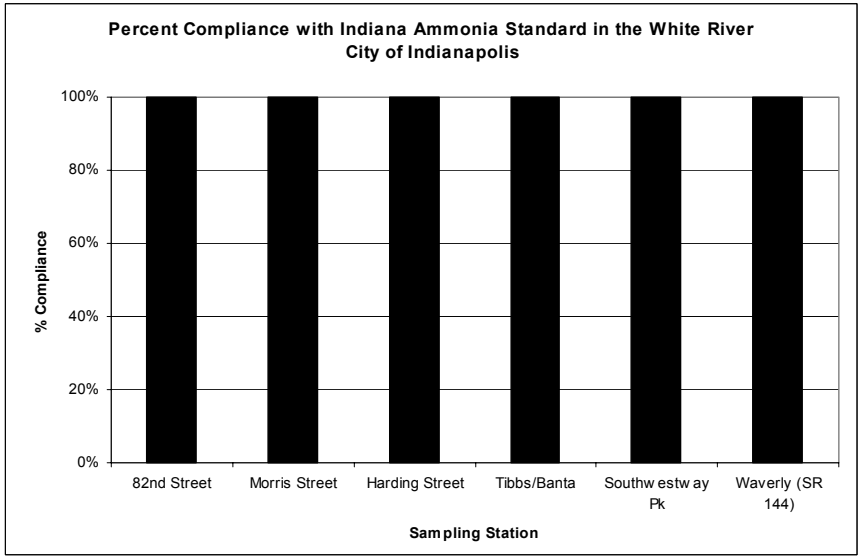
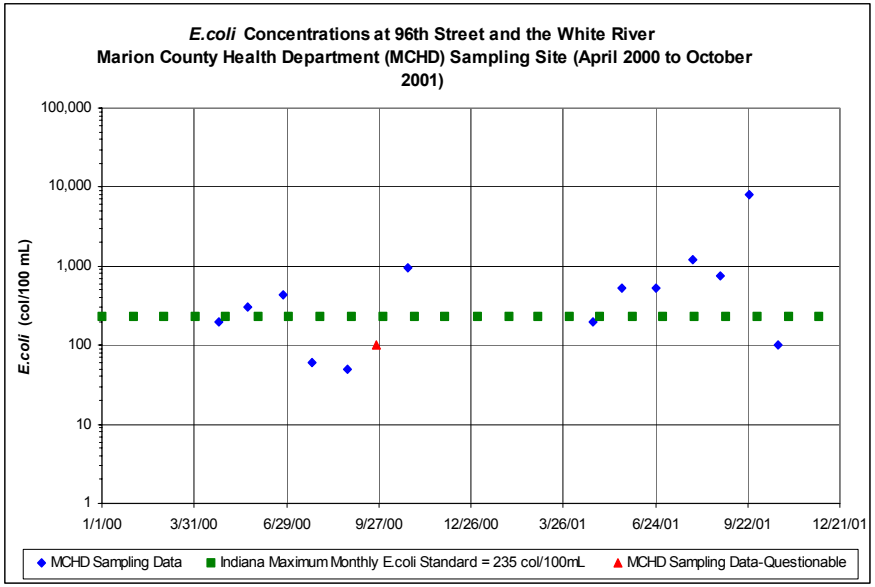
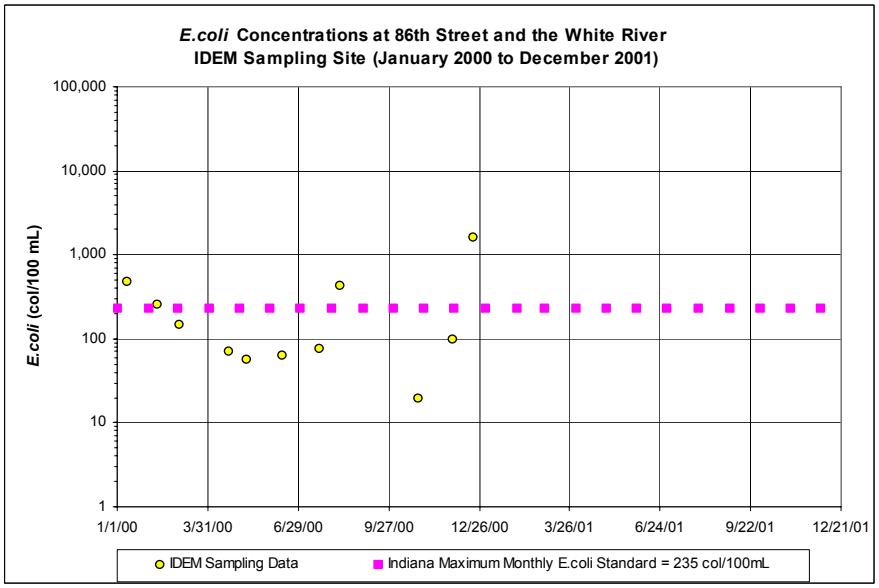


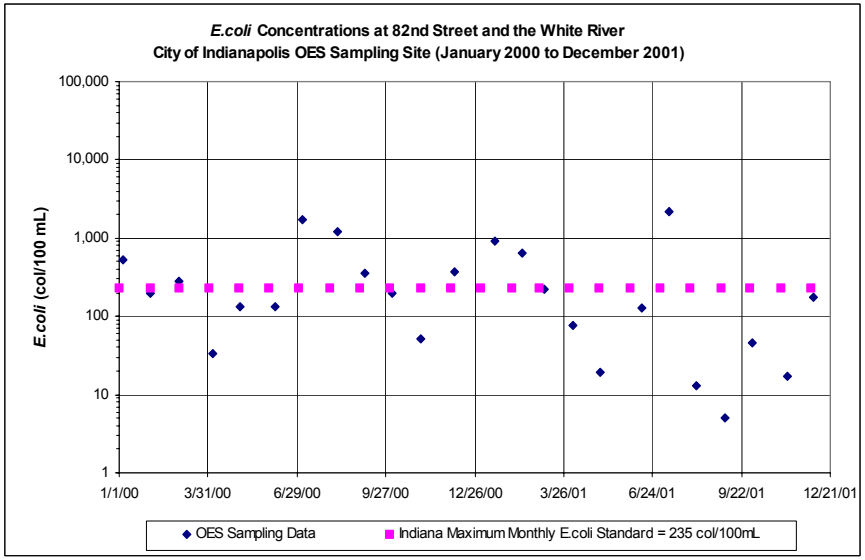


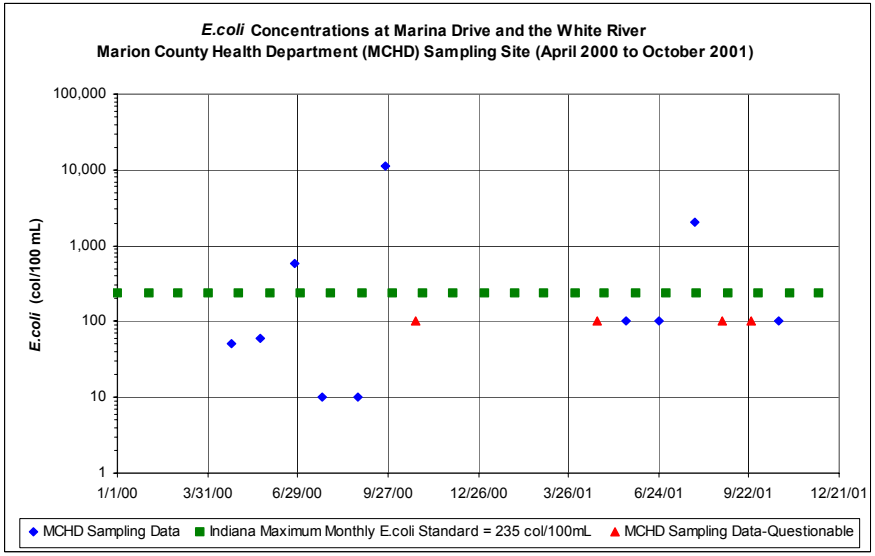


White River *E. coli* Data









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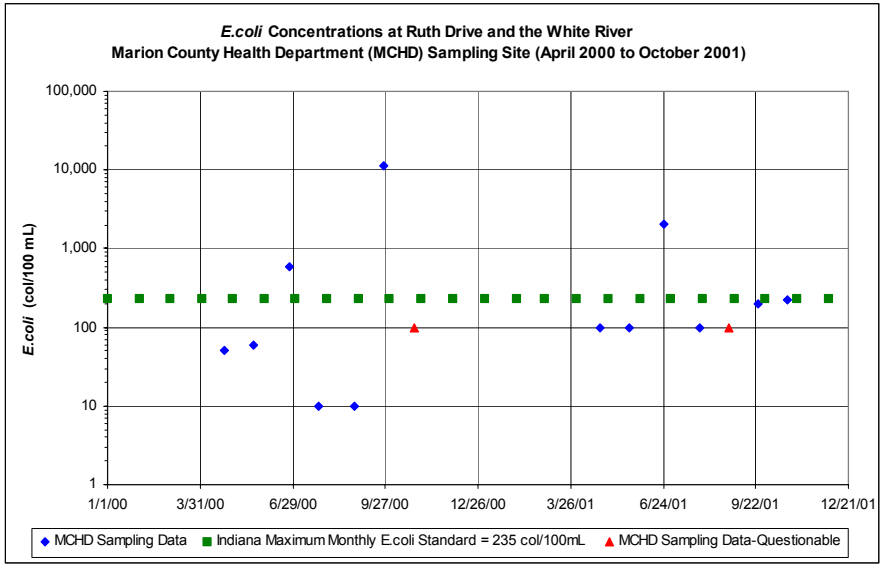

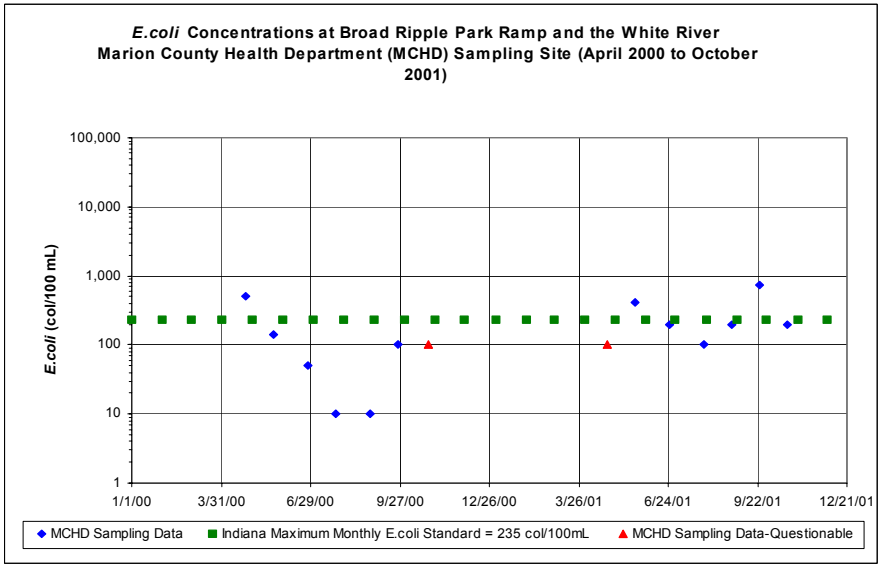

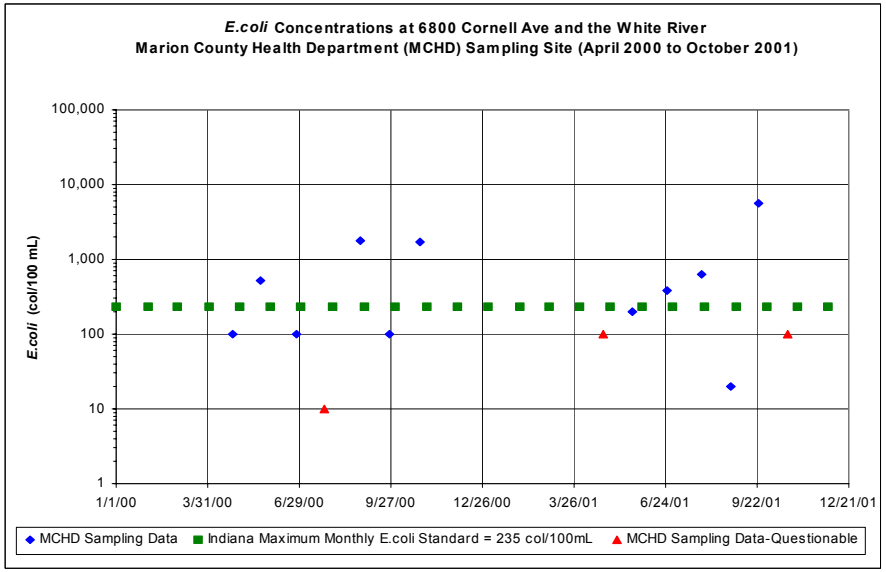

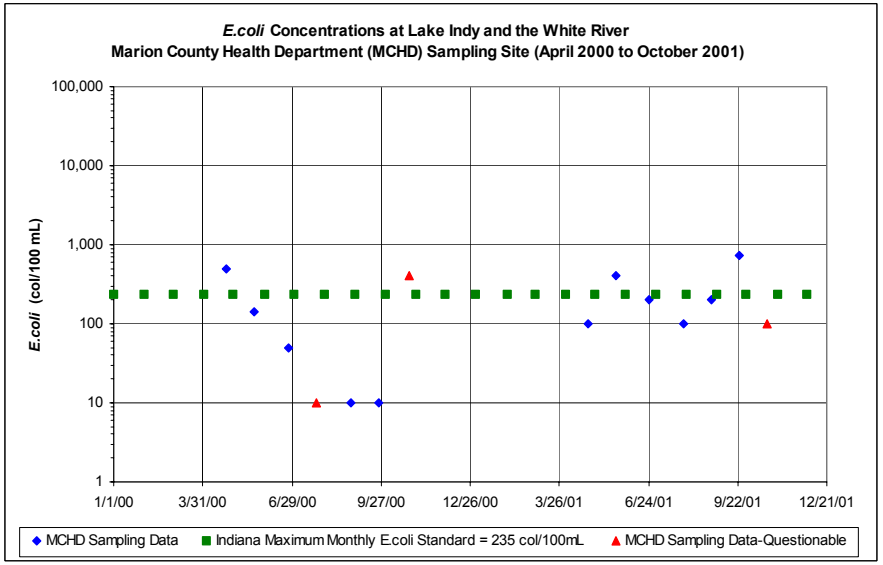

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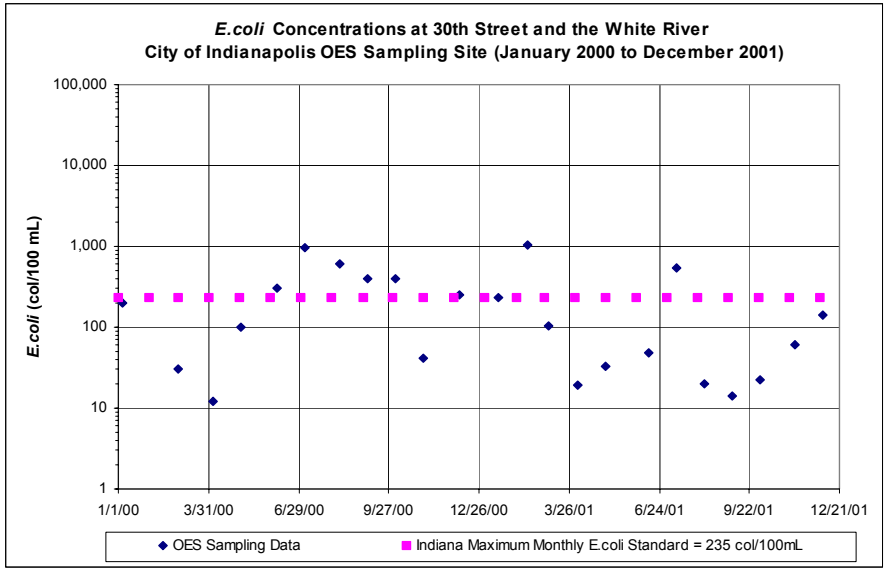
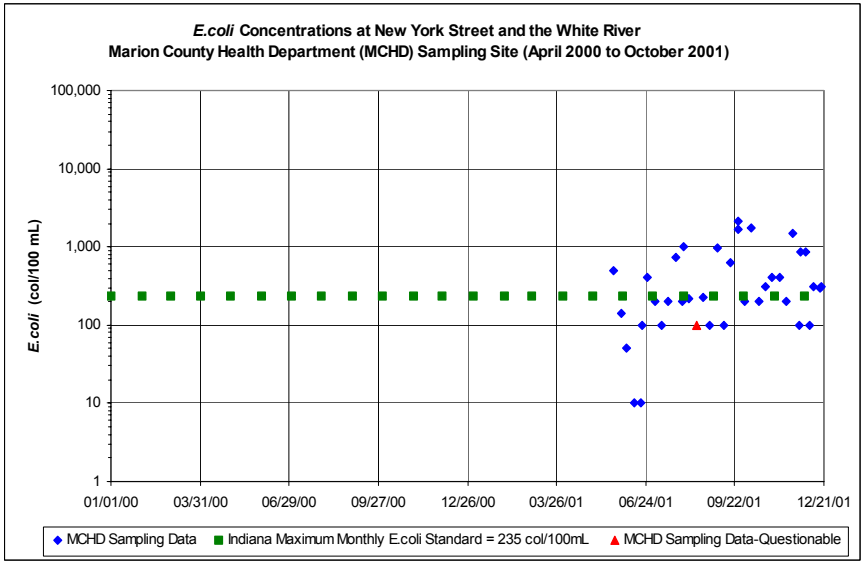
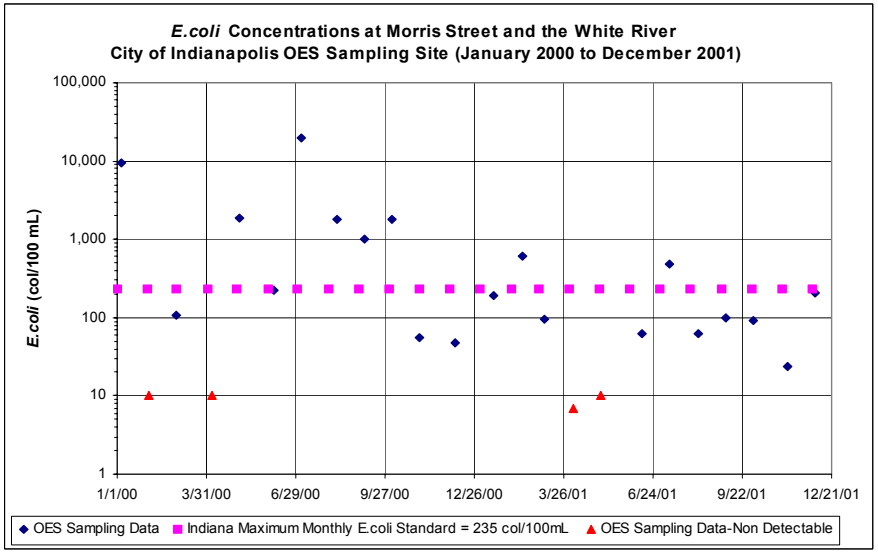
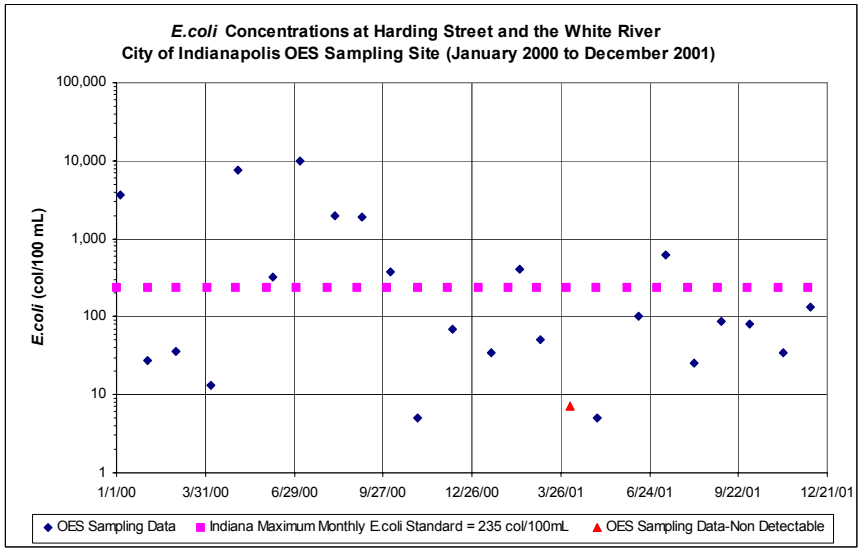
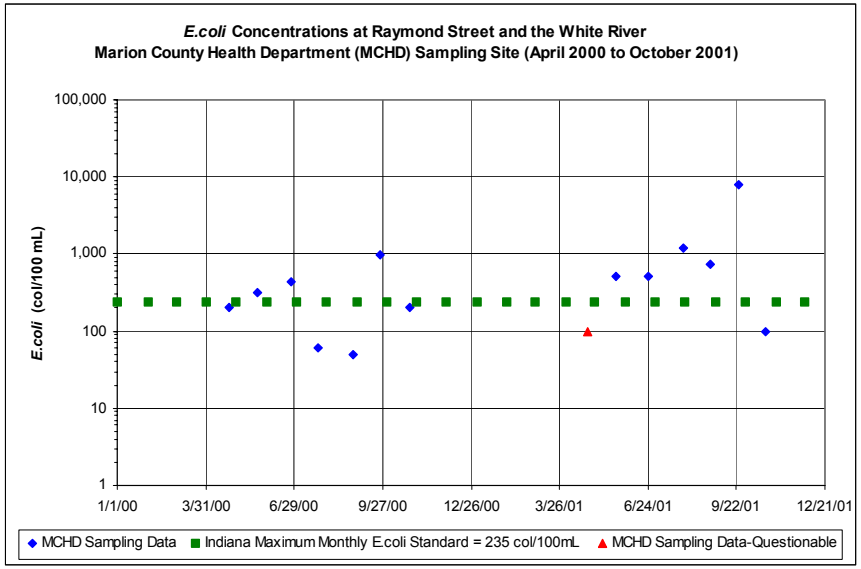


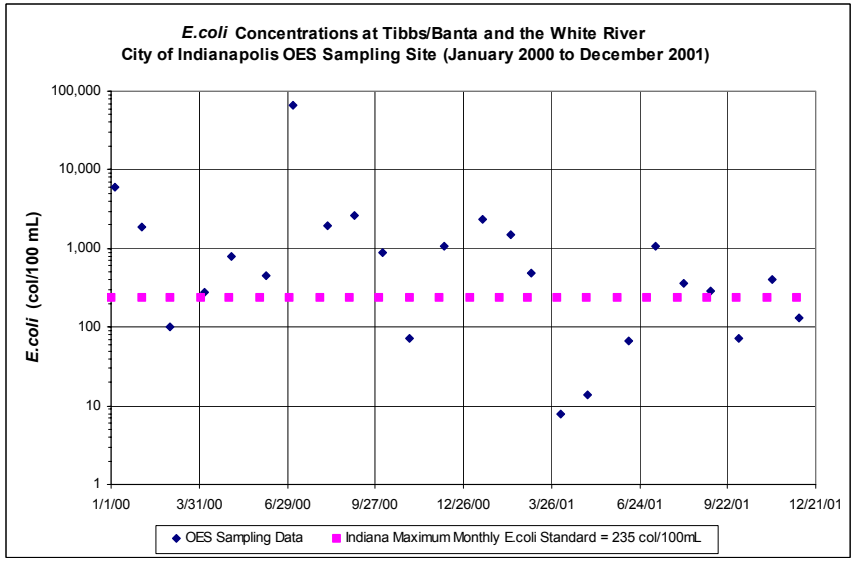


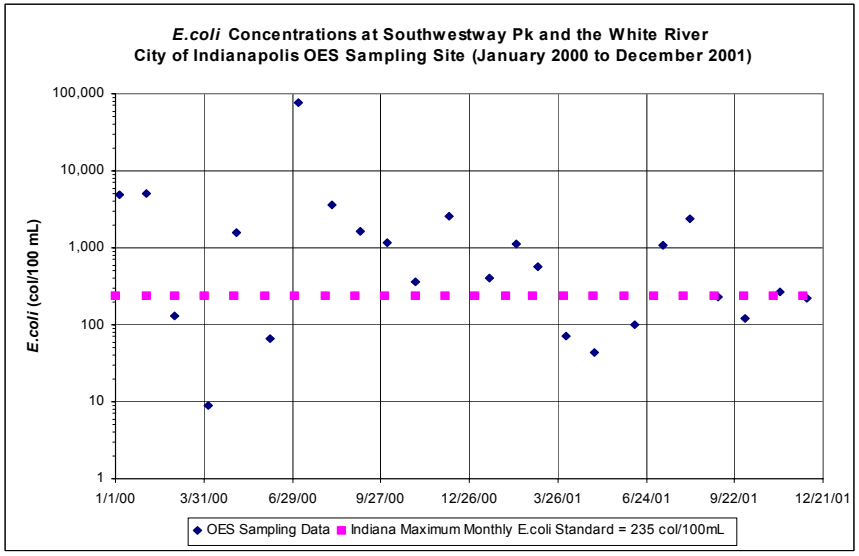


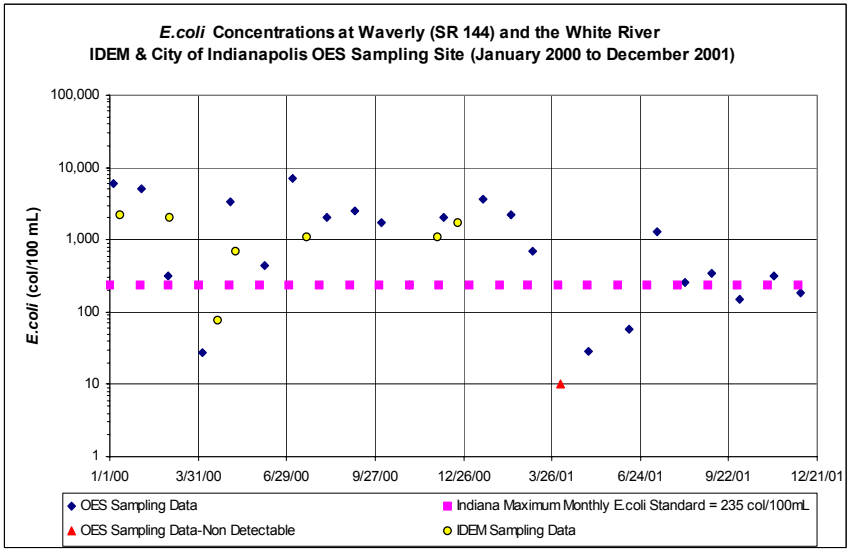


White River *E. coli* Data (continued)

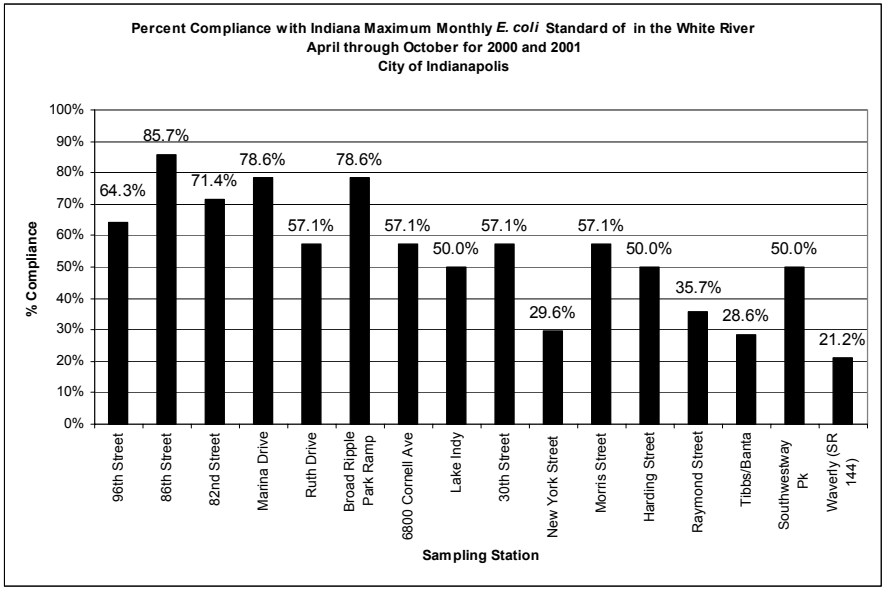


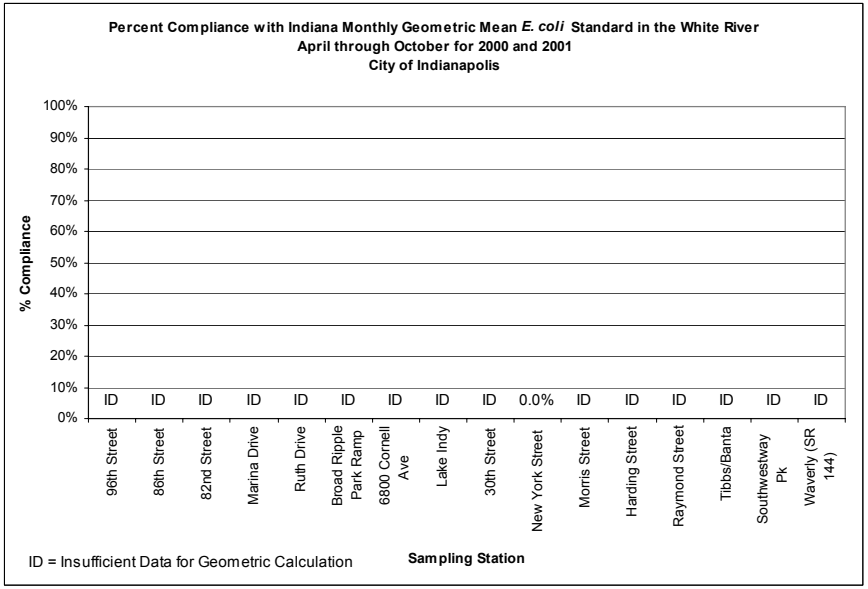




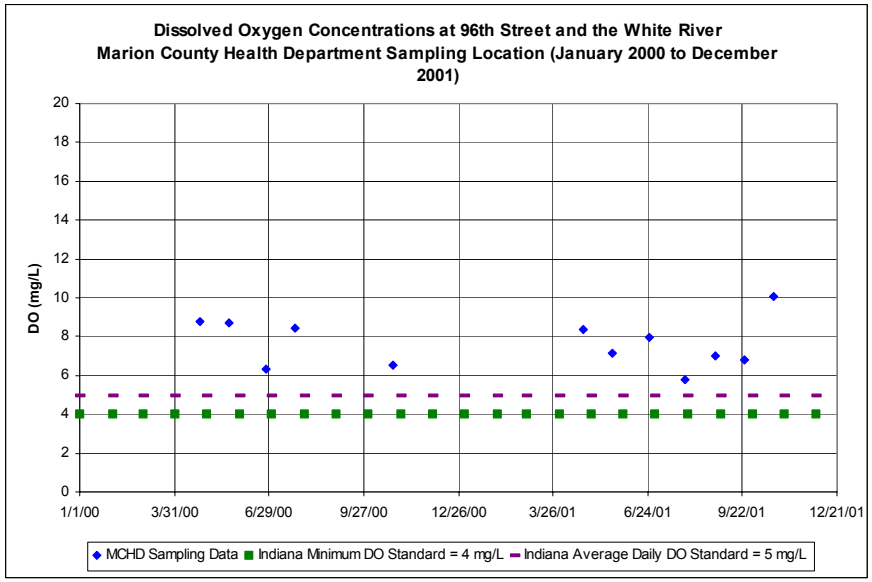


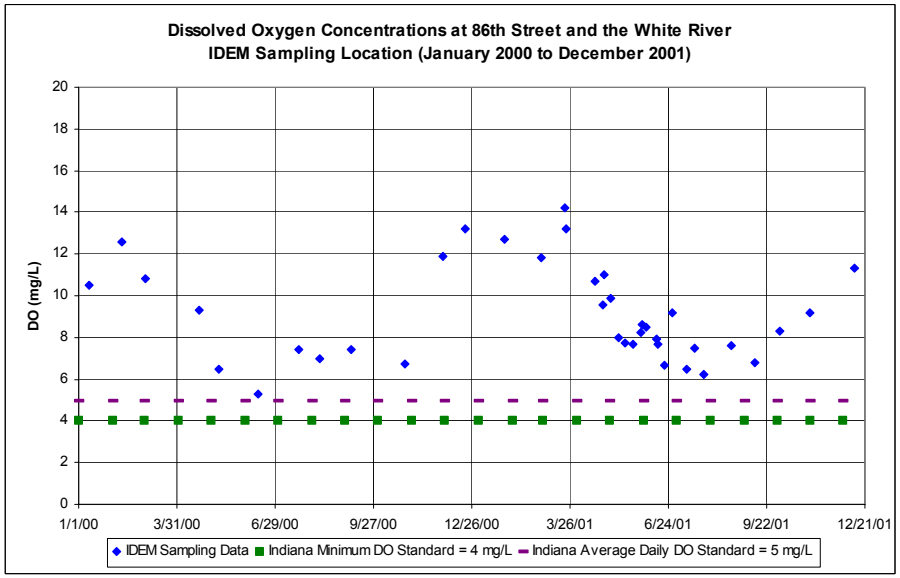
White River *E. coli* Data (continued)

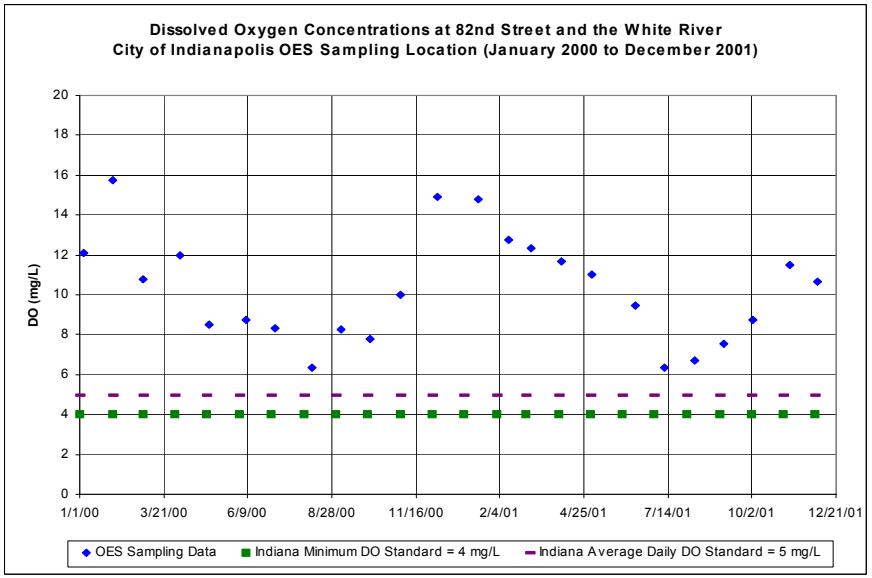


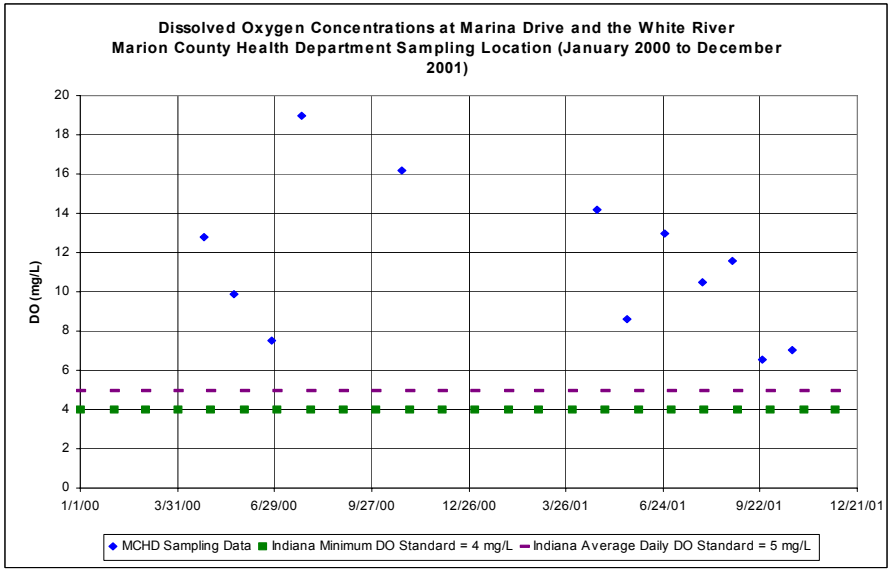


White River Dissolved Oxygen Data









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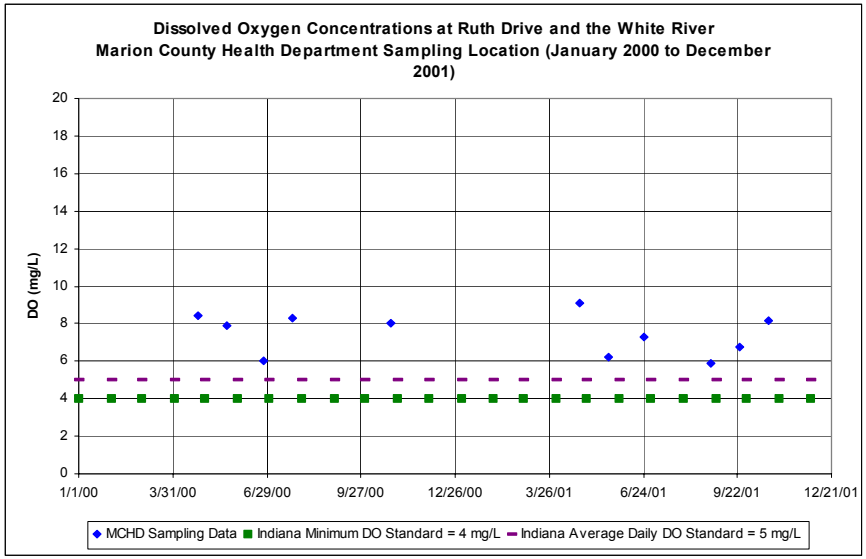

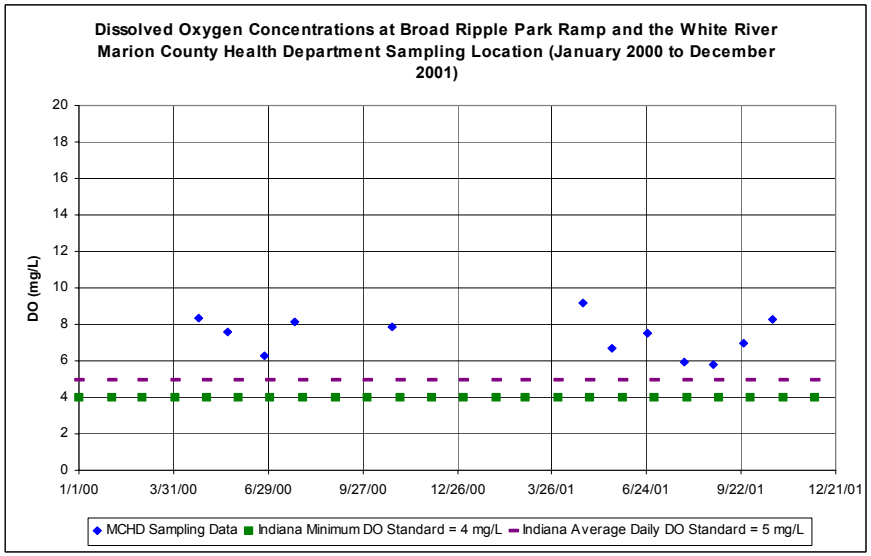

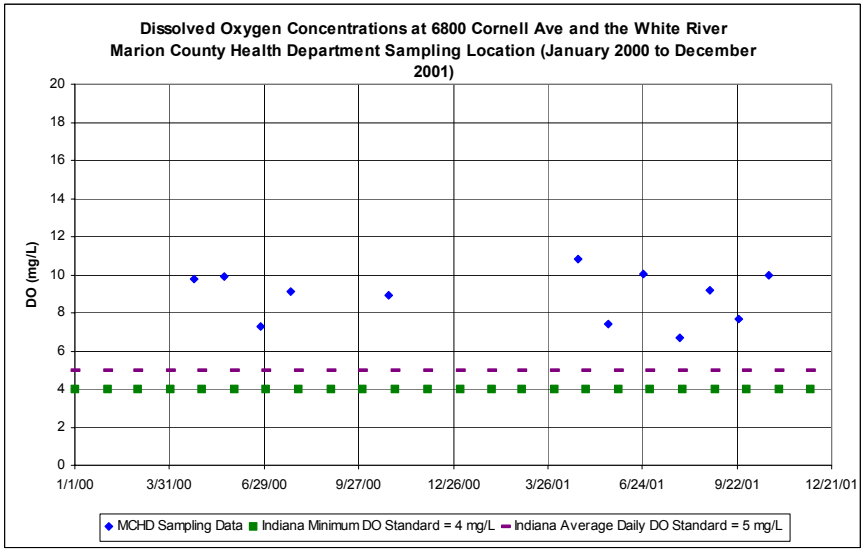

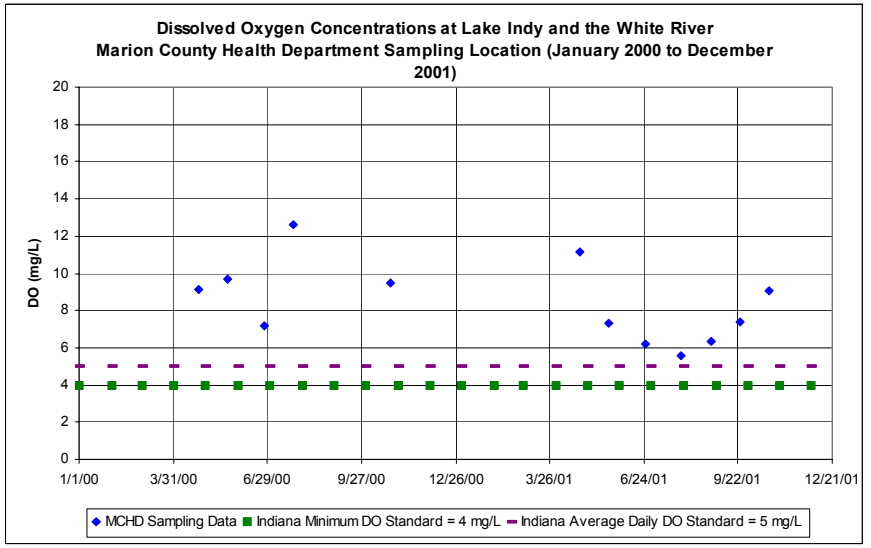

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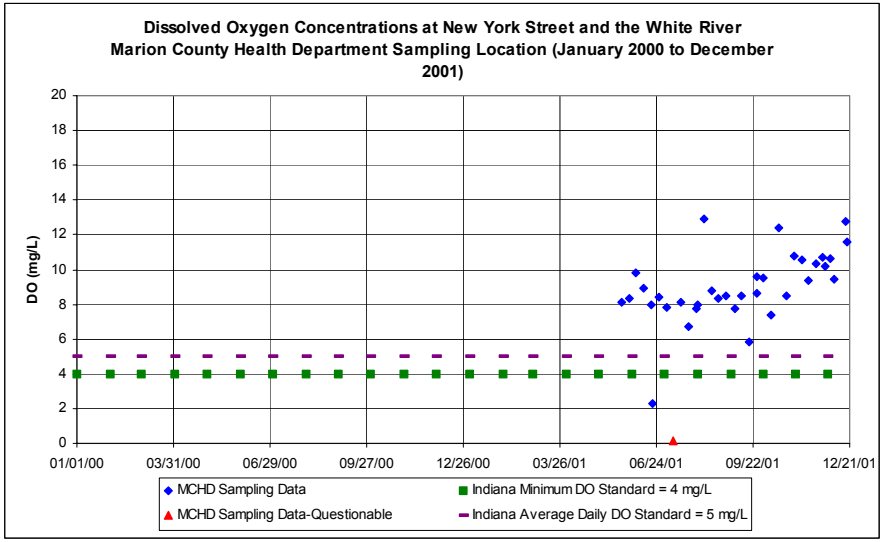
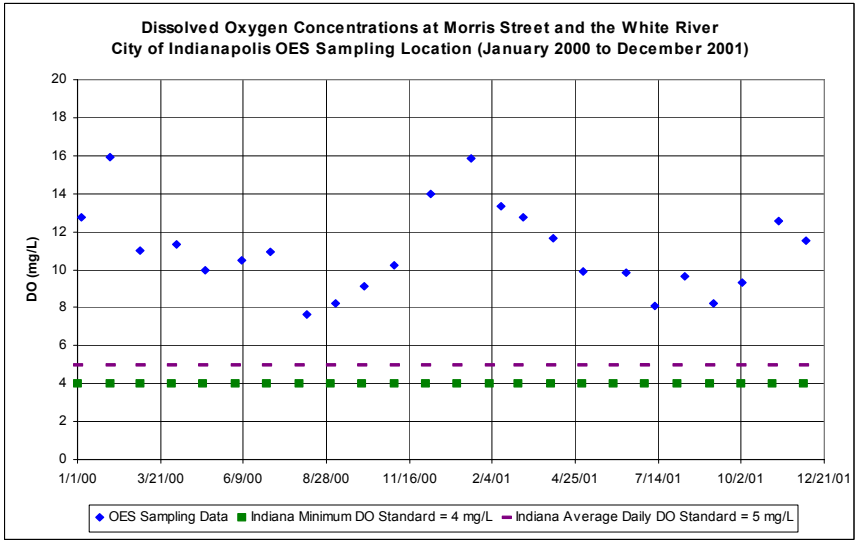
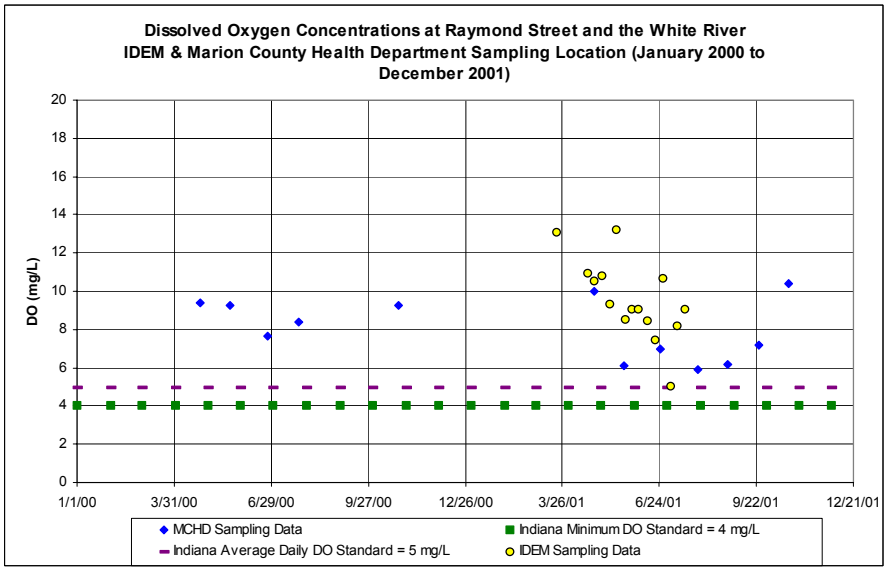
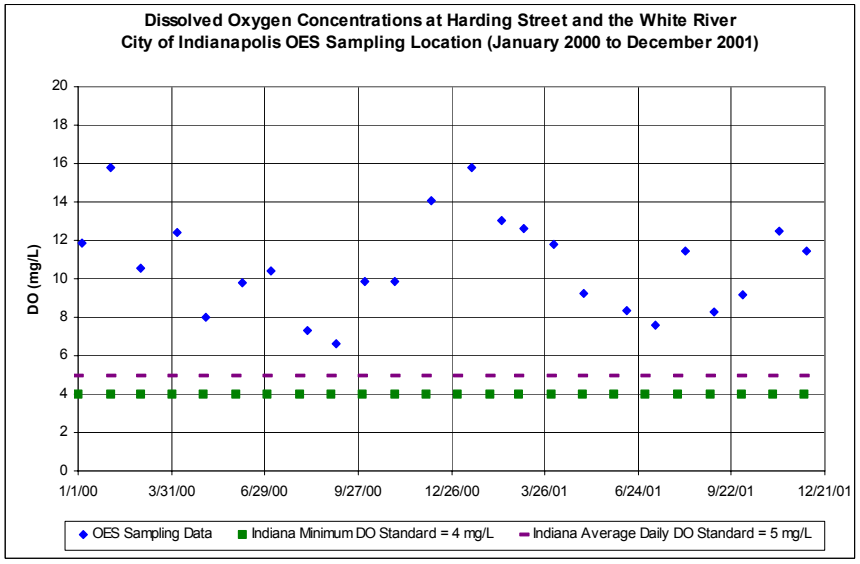
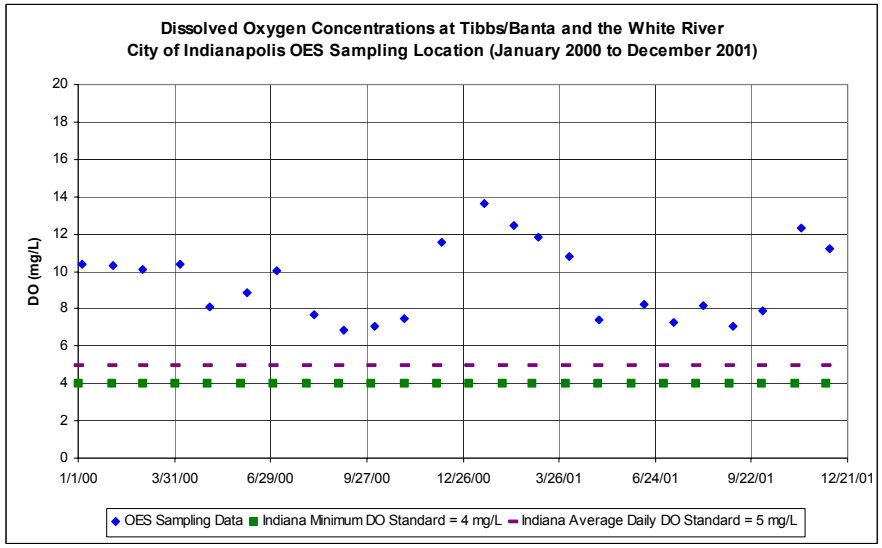


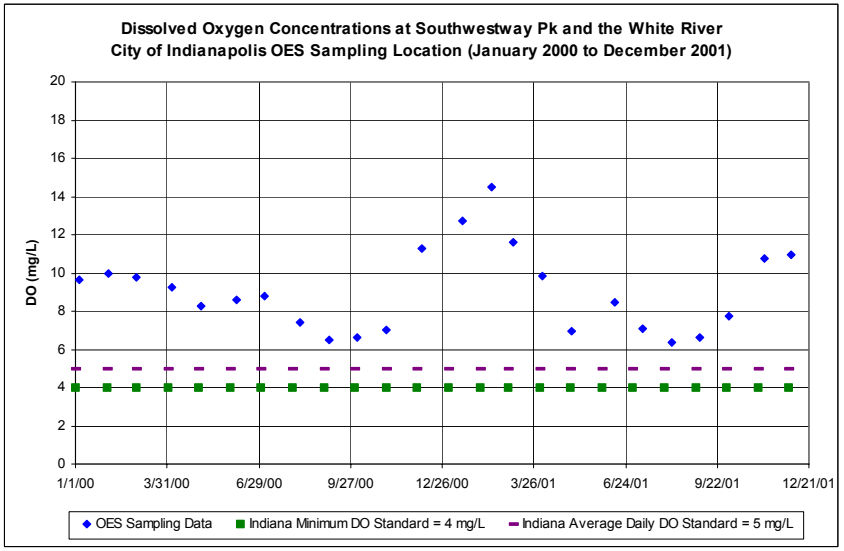


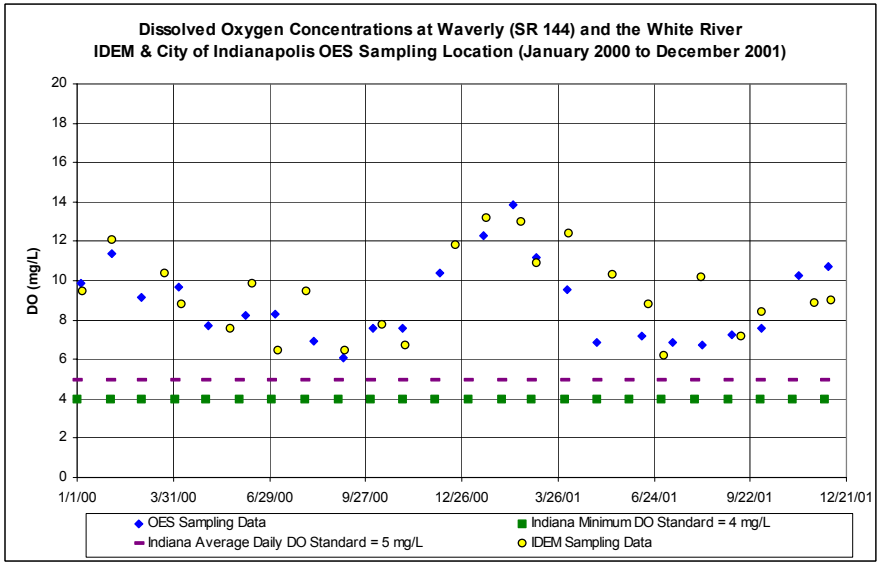




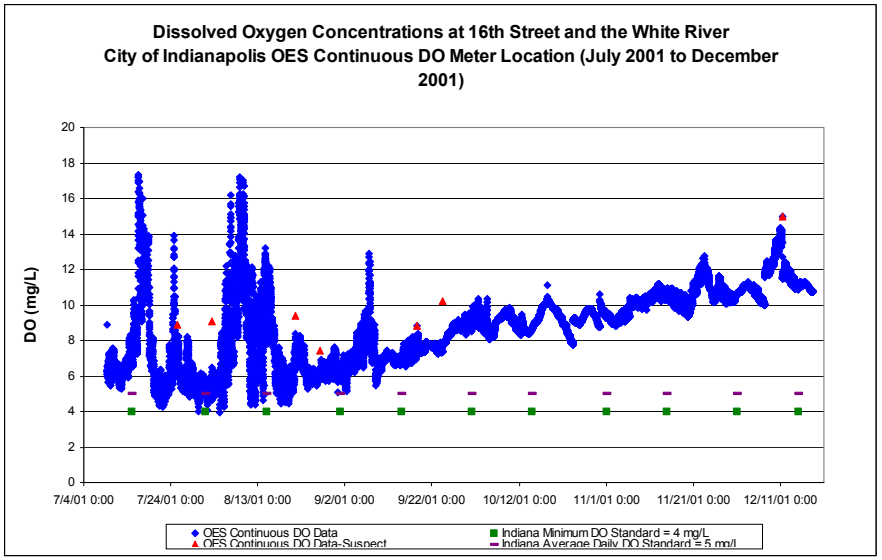
White River Dissolved Oxygen Data (continued)

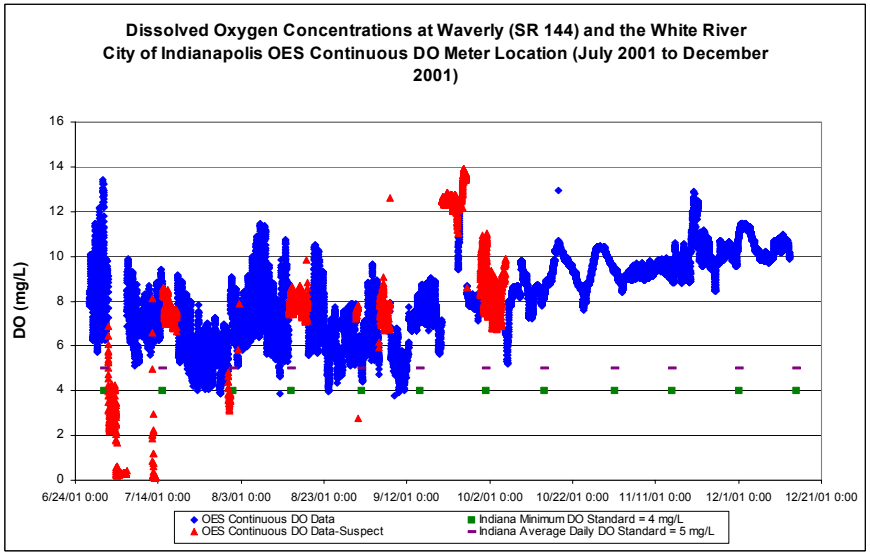


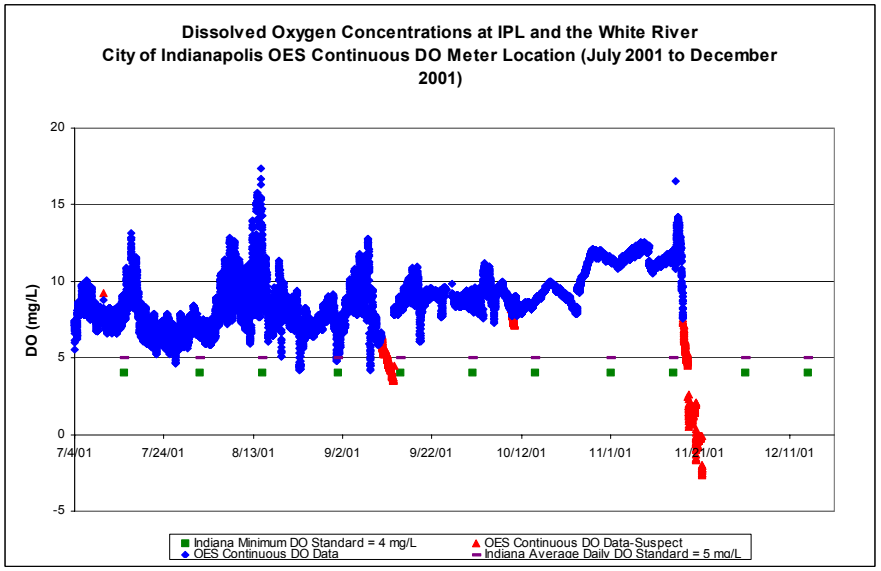




White River Continuous Dissolved Oxygen Monitors







White River Dissolved Oxygen Data (continued)